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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,022	05/26/2000	Dwight Sunada	SUN-P5125	9975

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PARK, VAUGHAN & FLEMING LLP
508 SECOND STREET
SUITE 201
DAVIS, CA 95616

EXAMINER	
YAO, KWANG BIN	

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/580,022	SUNADA ET AL.	
	Examiner	Art Unit	
	Kwang B. Yao	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varghese et al. (US 6,449,256) in view of Kloth et al. (US 6,570,877).

Varghese et al. disclose a fast level four switching system comprising the following features: regarding claim 1, as depicted in Figs. 8, 9, a router (FORWARD TABLE ROUTER), comprising: a content addressable memory (FORWARDING TABLE) which stores Internet Protocol address prefixes in an order independent of lengths of the Internet Protocol address prefixes; and an encoder (PROCESSOR) coupled to the content addressable memory (FORWARDING TABLE) which stores a plurality of codes, corresponding to the Internet Protocol address prefixes in the content addressable memory, and compares the codes corresponding to matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix (Fig. 14, 17, 19,21, 22); regarding claim 2, a memory (FORWARDING TABLE) coupled to the encoder (PROCESSOR), the memory (FORWARDING TABLE) for storing (Figs. 11, 12, 13, 15) a port number corresponding to each Internet Protocol address prefix in the content addressable memory and other information for routing an incoming Internet Protocol packet; regarding claim 3, wherein the encoder (PROCESSOR) includes circuitry for

finding one of the plurality of codes; regarding claim 4, wherein the encoder (PROCESSOR) includes circuitry for deleting one of the plurality of codes (column 10, lines 53-56); regarding claim 5, wherein each of the plurality of codes indicates a number of relevant bits in the corresponding Internet Protocol address prefix (Figs. 11, 12, 13, 15); regarding claim 6, wherein among the codes corresponding to matching Internet Protocol address prefixes, a code indicating a highest number of relevant bits indicates the longest matching Internet Protocol address prefix (Fig. 14, 17, 19, 21, 22); regarding claim 7, wherein the code indicates up to 32 relevant bits in the corresponding Internet Protocol address prefix (Figs. 11, 12, 13, 15); regarding claim 8, wherein the code indicates up to 128 relevant bits in the corresponding Internet Protocol address prefix (Figs. 11, 12, 13, 15); regarding claim 9, storing Internet Protocol address prefixes in a content addressable memory (FORWARDING TABLE) in an order independent of lengths of the Internet Protocol address prefixes; and comparing (PROCESSOR) codes corresponding to matching (Fig. 14, 17, 19, 21, 22) Internet Protocol address prefixes in an encoder to find a longest matching Internet Protocol address prefix; regarding claim 10, wherein the codes indicate numbers of relevant bits in the corresponding Internet Protocol address prefixes (Figs. 11, 12, 13, 15); regarding claim 11, wherein among the codes corresponding to matching Internet Protocol address prefixes, the code indicating a highest number of relevant bits indicates the longest matching Internet Protocol address prefix (Fig. 14, 17, 19, 21, 22); regarding claim 26, receiving Internet Protocol address prefixes; generating (FORWARDING TABLE) codes corresponding to a number of relevant bits (Figs. 11, 12, 13, 15) in the Internet Protocol address prefix receiving a packet with a destination Internet Protocol address; comparing (PROCESSOR) the destination Internet Protocol address to the Internet Protocol address prefixes to find the Internet Protocol

address prefixes that match the destination Internet Protocol address (Fig. 14, 17, 19, 21, 22); comparing the codes corresponding to the matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix; and sending the packet to a port corresponding to the longest matching Internet Protocol address prefix (Fig. 14, 17, 19, 21, 22). See column 9-19.

Varghese et al. does not disclose the following features: regarding claim 1, wherein new entries are stored in the content addressable memory in random order; regarding claim 9, wherein new entries are stored in the content addressable memory in random order; regarding claim 26, wherein the Internet Protocol address prefixes are stored within a content addressable memory in random order. Kloth et al. discloses a system comprising the following features: regarding claim 1, wherein new entries are stored in the content addressable memory in random order (column 2, lines 5-7; column 4, lines 5-8); regarding claim 9, wherein new entries are stored in the content addressable memory in random order (column 2, lines 5-7; column 4, lines 5-8); regarding claim 26, wherein the Internet Protocol address prefixes are stored within a content addressable memory in random order (column 2, lines 5-7; column 4, lines 5-8). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Varghese et al. by using the features, as taught by Kloth et al., in order to provide a quick management for a large table of packet forwarding information by a CPU without causing a significant impact on system throughput or responsiveness. See Kloth et al., column 2, lines 21-24.

Response to Arguments

3. Applicant's arguments filed 7/6/04 have been fully considered but they are not persuasive.

On pages 5-6, Applicant argues that Varghese et al. does not suggest using a content addressable memory that automatically provides the longest match and that stores entries in random order. Examiner respectfully disagrees with this argument. First of all, it is noted that the argued features of "using a content addressable memory that **automatically provides** the longest match" are not recited in the claims (emphasis added). Thus, it is respectfully submitted that the above features are irrelevant with respect to the rejected claims. Moreover, it is noted that the newly found reference of Kloth et al. does disclose the features of "storing entries in random order", see column 2, lines 5-7; column 4, lines 5-8. Therefore, it is respectfully submitted that the combined reference of Varghese et al. and Kloth et al. would have been obvious to arrive the claimed invention.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

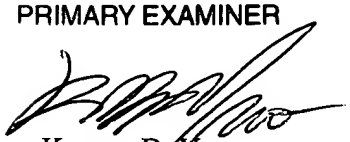
CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang B. Yao whose telephone number is 571-272-3182. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KWANG BIN YAO
PRIMARY EXAMINER



Kwang B. Yao
December 20, 2004